

RF magnetron  
substrate Si (111)  
Si (100)  
FeSi<sub>2</sub>

# PATENT ABSTRACTS OF JAPAN

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(71)Applicant : MATSUSHITA ELECTRONICS  
INDUSTRY CORP

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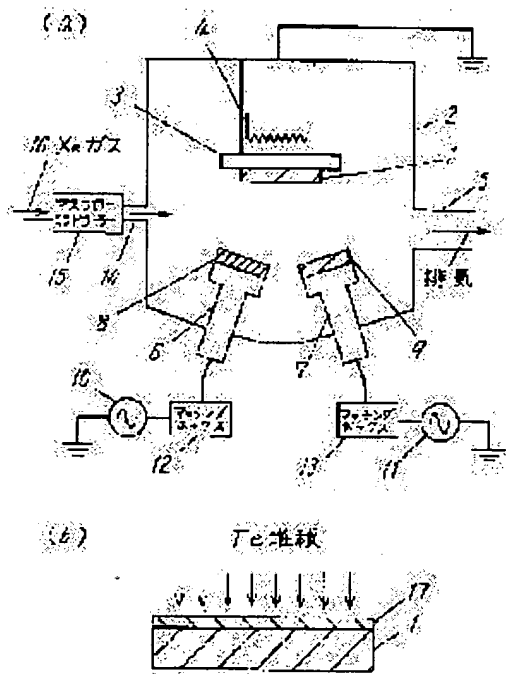
(72)Inventor : TAMURA AKIYOSHI

## (54) THIN FILM FORMATION

### (57)Abstract:

PROBLEM TO BE SOLVED: To provide a film forming method for forming a high quality  $\beta$ -FeSi<sub>2</sub> epitaxial layer on an Si-substrate.

SOLUTION: A  $\beta$ -FeSi<sub>2</sub> layer 17 is formed by arranging an n-type Si-substrate 1 of the (100) plane on a substrate holder 3 provided in a vacuum chamber 2 of a magnetron sputtering device and then depositing Fe on the Si-substrate 1 by sputtering using gaseous Xe as the sputtering gas while heating the substrate so as to keep its temp. at 550 to 650°C. Gaseous Xe has large mass in comparison with gaseous Ar being generally used in sputtering. Therefore, when Fe is deposited by sputtering, the dissociation of the Si-Si bond at the surface of the Si-substrate proceeds efficiently, and the reaction of Si and deposited Fe is accelerated by exposing the surface of the Si-substrate to the plasma gas of Xe, thereby the high quality  $\beta$ -FeSi<sub>2</sub> epitaxial layer can be formed.



## LEGAL STATUS

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